




Unit 2 – Chemistry and Enzymes

Topic			
Organic vs. Inorganic			
Carbohydrates, Proteins, Lipids, Nucleic Acids			
pH			
Enzymes			

Organic vs. Inorganic	
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Enzymes	

Name: _____

Which substance found in the cytoplasm of an ameba is an inorganic compound?

- A) amino acid B) glucose C) water D) nucleic acid

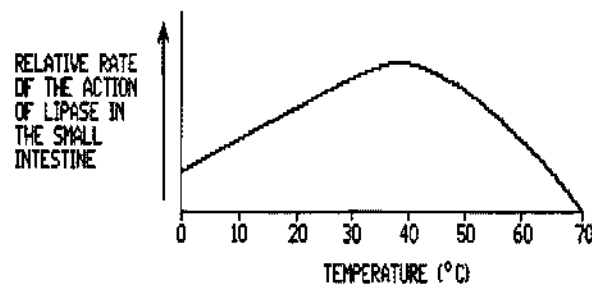
2) A certain enzyme will hydrolyze egg white but not starch. Which statement best explains this observation?

- A) Egg white acts as a coenzyme for hydrolysis.
B) Starch is composed of amino acids.
C) Starch molecules are too large to be hydrolyzed.
D) Enzymes are specific in their actions.

3) Which molecule usually contains hydrogen and oxygen atoms in the ratio 2:1?

- A) protein B) nucleic acid C) lipid D) carbohydrate

4) According to the graph below, at what temperature will the denaturation of lipase begin?



- A) at 40°C C) below 0°C
B) at 68°C D) between 0°C and 38°C

5) Which environmental condition would most likely have the least effect on the rate of an enzyme-controlled hydrolytic reaction in humans?

- A) the pH of the solution C) the amount of light present
B) the amount of enzyme present D) the temperature of the solution

6) An enzyme-substrate complex may result from the interaction of molecules of

- A) protein and protease C) sucrose and maltase
B) glucose and lipase D) fat and amylase

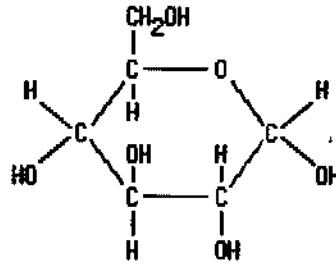
7) In humans, *most* enzyme-controlled reactions have their greatest reaction rates at a pH value closest to

- A) 14 B) 12 C) 7 D) 1

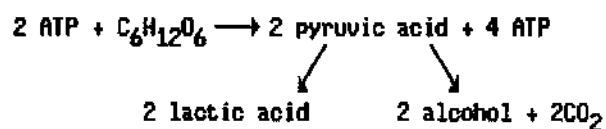
8) Which organic compound is correctly matched with the subunit that composes it?

- A) starch — glucose C) lipid — sucrose
B) maltose — amino acid D) protein — fatty acid

- 9) Which compound has the structural formula shown below?



- A) ATP B) PGAL C) starch D) glucose
- 10) The "lock-and-key" model of enzyme action illustrates that a particular enzyme molecule
- A) forms a permanent enzyme-substrate complex
 B) reacts at identical rates under all environmental conditions
 C) interacts with a specific type of substrate molecule
 D) may be destroyed and resynthesized several times
- 11) Which is an example of an inorganic compound?
- A) glucose B) starch C) water D) maltase
- 12) Which term best describes a solution with a pH of 5?
- A) basic B) colorless C) acidic D) neutral
- 13) Which represents a carbohydrate molecule?
- A) $C_6H_{12}O_6$ B) $C_6H_{12}O_5$ C) $C_6H_6O_6$ D) $C_{12}H_{12}O_6$
- 14) Which is an organic compound found in most cells?
- A) water C) glucose
 B) oxygen gas D) sodium chloride
- 15) The diagram below represents a series of chemical reactions.

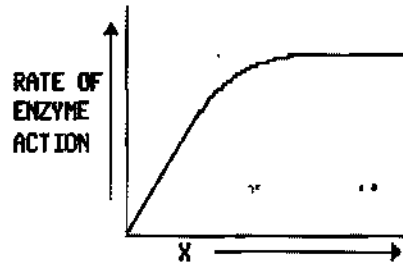


Which organic molecule is represented by $C_6H_{12}O_6$?

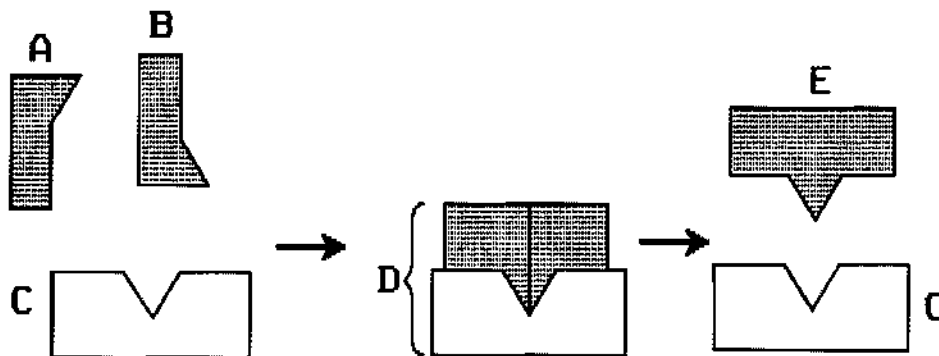
- A) chlorophyll B) cellulose C) glucose D) starch
- 16) The rate of action of the enzyme protease is affected by
- A) pH, temperature, and carbohydrate concentration
 B) temperature, particle size, and lipase concentration
 C) pH, particle size, and amylase concentration
 D) temperature, pH, and protein concentration

17) Name an indicator that could be used to determine if a solution is an acid or a base.

18) The graph below represents the rate of enzyme action for gastric protease when this enzyme concentration is kept constant. The pattern of enzyme action shown in the graph most likely results from varying which experimental factor (x in the graph)?



- A) substrate concentration
B) hydrogen-ion concentration
C) intensity of light
D) volume of enzyme
- 19) Some vitamins are essential to an organism because they function as
- A) neurotransmitters
B) auxins
C) coenzymes
D) hormones
- 20) The diagram below represents enzyme activity.



Letter *D* represents

- A) the formation of RNA
B) a digestive end-product
C) the formation of ATP bonds
D) an enzyme-substrate complex

- 21) The chart below provides incomplete information about certain biochemical reactions.

REACTANTS	PRODUCTS	ENZYME INVOLVED
maltose, water	A	maltase
B	amino acids	protease
lipids, water	fatty acids, glycerol	C

The enzyme represented by letter C is known as

- A) amylase B) ATPase C) lipase D) sucrase
- 22) In most carbohydrates, the hydrogen to oxygen ratio is
- A) 2:1 B) 1:3 C) 1:2 D) 3:1

1) C 2) D 3) D 4) A 5) C

A 7) C 8) A 9) D 10) C

11) C 12) C 13) A 14) C 15) C

16) D

17) Litmus paper, pH paper, bromthymol blue, and phenolphthalein are acid-base indicators.

18) A 19) C 20) D 21) C 22) A